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ABSTRACT

The Computer Bus Program (Compubus Program) of the Modesto City Schools (California) was evaluated to determine the effectiveness of the computer literacy program for fourth, fifth, and sixth grade students at eight elementary compensatory education schools. The program provided instruction on computer vocabulary, knowledge, and applications in a converted school bus with 18 Apple IIe microcomputers, which spent an average of 18 days at each target school in the 1983-84 school year. A stratified random sample of 399 students was administered a computer literacy test and a questionnaire on their background characteristics. Data collected covered the student's grade level, school, age, sex, minimum competency reading and mathematics test scores, computer usage in the home and in school, video game usage at home, arcade game usage, and primary language spoken in the home. Results showed that 70% of the sample passed the computer literacy test. Five predictor variables were identified for use in subsequent evaluations: minimum competency reading test score, minimum competency math test score, primary language, arcade game usage, and grade. Appendices include the computer literacy test, teacher observation checklist, and student questionnaire. (Author/LMM)

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The Compubus Evaluation

Ivan P. Klimko

Modesto City Schools

Paper presented at the meeting
of the
American Educational Research Association,
Chicago, 1985

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ABSTRACT

The Compubus Program (Computer Bus Program) is a unique approach to instruction under conditions of finite resources. The Compubus (a converted school bus with eighteen Apple IIe computers and peripheral equipment) spent an average of eighteen days at eight elementary compensatory education schools serving students in grades 4, 5, and 6 during the 1983-84 academic year. This evaluation was conducted to: 1) determine the extent to which the program objectives were met for the specified target population and 2) collect detailed factual information describing the operation of the program for the designated population which hinted at the relationships among variables.

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The Compubus Program was developed by the Modesto City Schools District to increase computer literacy skills in fourth, fifth, and sixth grade students at eight elementary compensatory education schools. The Compubus Program originated from Federal Compensatory Education funds awarded to the Modesto City Schools District through a statewide grant competition. Mr. Jerry Frye, Administrator of Special Projects, wrote the $50,000.00 Chapter I grant during the 1982-83 academic year. Mr. Frye also was responsible for coordinating the myriad of activities to make the program operational.

The Modesto City Schools District serves a total of 2,900 Chapter I eligible students in eight elementary schools. Upon leaving the elementary program these students attend one of three junior high schools in the district. The junior high schools offer elective classes in computer education for all interested students. The purpose of the Compubus Program is to provide target students additional time and experiences with beginning skills in computer learning at the elementary level so they may compete with other students in the computer education program at the junior, and eventually, senior high school levels.

The Compubus Program revolves around the Compubus. The Compubus is a converted thirty-six passenger, forty foot long school bus. The Compubus contains eighteen Apple IIe computer stations (computer, monitor, disk drives), two printers, and two JVC monitors-receivors (large teaching monitors). Other unique features of the Compubus, besides computers, are: double-paned windows to reduce glare and help keep the inside temperature steady; a generator to supply electricity for heating and air conditioning; and a variety of attractive, custom-designed tables and cabinets. The electrical outlets for the Compubus are on the school sites. The Compubus is operated by a Media Center Assistant who drives the Compubus each day from the storage area to the various school sites.

During the course of the 1983-84 academic year the Compubus went to all eight Chapter I, K-6 schools. The bus spent an average of eighteen days on each campus and served students in grades 4, 5, and 6. It arrived at the school sites before the school day began and remained there until 4:00 p.m. The forty-five to ninety minute period beyond the school day provided extra time for students or teachers to use the Compubus facilities for varying purposes.

The computer literacy curriculum for the Compubus was developed during the summer of 1983 by a district committee of teachers and administrators with computer expertise. A group of fully trained teachers provided demonstrations for other staff members and parents during the program period. From this core group instructors will be selected to provide a staff development inservice training program on an intensive basis for teachers and administrators in the Modesto City Schools District and Stanislaus County.

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The three areas covered by the program objectives are vocabulary, knowledge, and applications.

1. Computer Vocabulary: By the end of the program year, after at least three hours of classroom instruction in computer vocabulary, the students will correctly answer ten out of fourteen items involving the following terms: computer, monitor, keyboard, chip, disk drive, input, memory, floppy disk, printer, software, hardware, program, output, and storage. This objective is for students in grades four, five, and six.
2. Computer Knowledge: By the end of the program year, after at least three hours of classroom instruction in computer knowledge, the students will correctly answer six out of nine items involving knowledge of computer applications and usage. This objective is for students in grades four, five, and six.
3. Computer Applications: By the end of the program year, after at least five hours of instruction in computer applications, the students will master one of two sets of items on a teacher checklist. One set of items involves applications such as typing a preselected sentence on the computer. The other set of items involves running various software packages. The teachers will make an omnibus judgment regarding student mastery/non-mastery of the two sets of items on the checklist. The sets of items for grades four, five, and six will be progressively more difficult.

The District wanted to evaluate the effectiveness of the Compubus Program against its program objectives. The study provided the District with initial information in regard to how well the target students achieved in beginning computer literacy skills with additional time and experiences. The extent to which the computer literacy skills achieved by the target students will help them in competition with other junior high school students is clearly an empirical question.

METHOD

Subjects

A stratified random sample of 399 students was selected from the fourth, fifth, and sixth grade classes in eight elementary compensatory education schools. The total number of students in the fourth, fifth, and sixth grades of the eight elementary compensatory schools during the time of the study was approximately 1611.

Procedures

From February to June of 1984 students were administered a computer literacy test consisting of three sections that matched the program objectives (see, for example, Appendix A). The first section consisted of fourteen multiple choice items with four response options directed at computer vocabulary; the items in the first section were weighted to constitute thirty percent of the total test score. The second section consisted of nine multiple choice items with four response options directed at knowledge of computer usage and applications; the items in the second section

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were weighted to constitute twenty percent of the total test score. The third section consisted of two sets of items on a teacher checklist. One set of items involved applications such as typing a preselected sentence on the computer; the other set of items involved applications such as running various software packages. The sets of items for grades four, five, and six were progressively more difficult. The teachers made an omnibus judgment regarding student mastery/non-mastery of the two sets of items on the checklist; the items in the third section were weighted to constitute fifty percent of the total test score. A score of sixty percent on the computer literacy test was passing for the individual student. The first twenty-three multiple choice items were transferred from a paper test to a disk; students took the test on the Apple IIe terminals. The students' responses from the multiple choice items were scored using the PASS software package. All students' responses on the multiple choice test and the teacher checklist were eventually transferred to the SPSS software package for statistical analyses.

From February to June of 1984 students also were administered a seven item questionnaire to estimate their background characteristics (see, for example, Appendix B). The questionnaire was directed at determining the amount of computer usage of the students prior to instruction as well as several other background characteristics.

The reliability estimate for the total test was given by coefficient alpha (Cronbach, 1951). This reliability estimate was used to describe the consistency of the measures and to determine the proportion of variance in the criterion that is "explainable". The alpha for the computer literacy test was $r = .76$.

The content validity for the two objective sections of the computer literary test was obtained by having a committee of teachers match the items to the program objectives. The checklist section of the test was developed by teachers to match the program objectives. The program objectives varied by type of cognition.

The evaluation design was descriptive and correlational. The evaluation was conducted to: 1) determine the extent to which the program objectives were met for the specified target population and 2) collect detailed factual information describing the operation of the program for the designated population which hinted at the relationships among variables.

A series of meetings was built into the procedures to allow a committee of teachers and administrators to review the evaluation's preliminary report and to gather informal data concerning secondary effects in regard to the Compubus Evaluation.

Analyses

The dependent variable for the evaluation was achievement test performance on the computer literary test. The independent variables for the evaluation were grade, school, age, sex, minimum competency reading and mathematics test scores (from the preceding

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academic year), computer usage in the home, computer usage in school, video game usage at home, arcade game usage, and primary language spoken in the home.

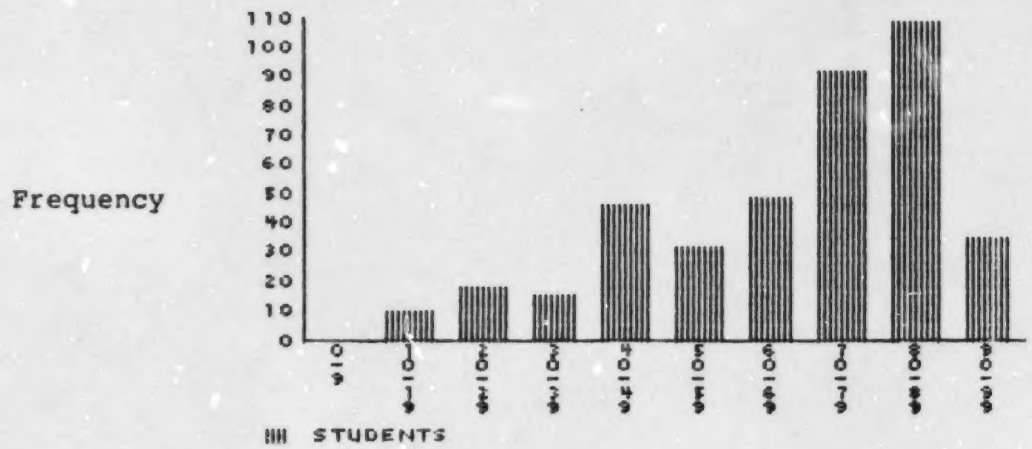
The relationships between all or selected independent variables and computer literacy achievement test performance were examined by a series of descriptive and correlational analyses.

RESULTS

Table 1 presents a frequency distribution of student performance on the computer literacy test by district.

Table 1

Frequency Distribution of Student Performance on the Computer Literacy Test By District



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Tables 2 to 5 present the means, standard deviations, and the number of students tested in relation to the computer literacy test by: 1) sex, 2) primary language, 3) grade, and 4) school. For purposes of comparison the last line of the tables include the district (all eight schools) figures.

Table 2

Means, Standard Deviations, and the Number of Students Tested in Relation to the Computer Literacy Test By District and By Sex

Variable	Mean	Standard Deviation	Number of Students Tested
Male	68.96	20.26	200
Female	66.63	20.38	199
District	67.79	20.32	399

Table 3

Means, Standard Deviations, and the Number of Students Tested in Relation to the Computer Literacy Test By District and By Primary Language

Variable	Mean	Standard Deviation	Number of Students Tested
Spanish	61.53	20.31	122
Vietnamese	42.39	.00	1
Cambodian	53.99	19.19	9
Laotian	49.67	26.47	10
Arabic	42.39	.00	1
Other	48.91	53.80	2
English	72.36	18.36	254
District	67.79	20.32	399

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Table 4

Means, Standard Deviations, and the Number of Students Tested in Relation to the Computer Literacy Test By District and By Grade

Variable	Mean	Standard Deviation	Number of Students Tested
Grade 4	64.57	18.16	159
Grade 5	68.59	21.28	119
Grade 6	71.25	21.55	121
District	67.79	20.32	399

Table 5

Means, Standard Deviations, and the Number of Students Tested in Relation to the Computer Literacy Test By District and By School

Variable	Mean	Standard Deviation	Number of Students Tested
School 1	62.15	20.15	34
School 2	79.54	10.60	23
School 3	67.42	23.00	66
School 4	69.25	20.33	49
School 5	69.90	15.28	49
School 6	56.14	23.27	49
School 7	70.98	19.19	66
School 8	70.20	17.39	43
District	67.79	20.32	399

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Table 6 presents a correlation matrix between all variables used in the evaluation.

Table 6

Correlation Matrix: All Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1	1.00											
	N=399											
	S=.00											
2	.015	1.00										
	N=399	N=399										
	S=.38	S=.00										
3	.006	.038	1.00									
	N=399	N=399	N=399									
	S=.46	S=.23	S=.00									
4	-.015	.037	-.049	1.00								
	N=399	N=399	N=399	N=399								
	S=.38	S=.23	S=.16	S=.00								
5	-.061	-.087	.731	-.082	1.00							
	N=399	N=399	N=399	N=399	N=399							
	S=.11	S=.04	S=.00	S=.05	S=.00							
6	.090	.214	.164	.156	-.055	1.00						
	N=231	N=231	N=231	N=231	N=231	N=231						
	S=.09	S=.00	S=.00	S=.01	S=.20	S=.00						
7	-.036	.198	-.036	.009	-.311	.324	1.00					
	N=234	N=234	N=234	N=234	N=234	N=224	N=234					
	S=.29	S=.00	S=.00	S=.44	S=.00	S=.00	S=.00					
8	-.115	.038	-.034	-.100	-.052	.056	.048	1.00				
	N=399	N=399	N=399	N=399	N=399	N=231	N=234	N=399				
	S=.01	S=.23	S=.25	S=.02	S=.15	S=.20	S=.23	S=.00				
9	.043	.075	.177	-.211	.132	.073	.009	-.041	1.00			
	N=399	N=399	N=399	N=399	N=399	N=231	N=234	N=399	N=399			
	S=.20	S=.07	S=.00	S=.00	S=.00	S=.14	S=.44	S=.21	S=.00			
10	-.133	.135	.025	-.011	-.057	.024	.062	.297	-.036	1.00		
	N=399	N=399	N=399	N=399	N=399	N=231	N=234	N=399	N=399	N=399		
	S=.00	S=.00	S=.31	S=.41	S=.13	S=.36	S=.18	S=.00	S=.23	S=.00		
11	-.193	.114	.160	.010	.132	.044	.086	.131	.003	.232	1.00	
	N=399	N=399	N=399	N=399	N=399	N=231	N=234	N=399	N=399	N=399	N=399	
	S=.00	S=.01	S=.00	S=.42	S=.00	S=.25	S=.01	S=.00	S=.46	S=.00	S=.00	
12	-.057	.261	.138	.021	-.045	.254	.236	.024	.111	.123	.144	1.00
	N=399	N=399	N=399	N=399	N=399	N=231	N=234	N=399	N=399	N=399	N=399	N=399
	S=.13	S=.00	S=.00	S=.34	S=.19	S=.00	S=.00	S=.32	S=.01	S=.01	S=.00	S=.00

The legend for the variables is: 1= sex; 2= primary language; 3= grade; 4= school; 5= age; 6= minimum competency reading test score (preceding year); 7= mimimum competency mathematics test score (preceding year); 8= computer usage in the home; 9= computer usage in school; 10= video game usage at home; 11= arcade game usage; and 12= computer literacy achievement test performance.

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Table 7 presents a standard stepwise multiple regression analysis between selected predictor variables and the criterion variable.

Table 7

R , Change in R , F Ratio for the Change, Significance of the Change, and Beta Weights for the Regression Equation

Predictor Variables	R	Change in R	F Ratio	Significance of F	Beta Weight
Minimum Competency Reading Test Score	.0307	.0307	12.59	.0004	.1753
Minimum Competency Mathematics Test Score	.0484	.0177	7.36	.0070	.1373
Primary Language	.0974	.0490	21.43	.0000	.2259
Arcade Game Usage	.1087	.0113	5.01	.0258	.1073
Grade	.1259	.0172	7.75	.0056	.1398

Serendipity is defined as the gift of finding valuable or agreeable things not sought for. In the Compubus Evaluation there were several surprising unintentional and unexpected outcomes that deserve our attention. During the series of meetings built into the procedures the committee of teachers and administrators reviewed the evaluation's preliminary report and reported informal data concerning secondary effects in regard to the Compubus Evaluation.

The computer bus was scheduled to remain at the assigned school site for forty-five to ninety minutes at the end of the school day until its 4:00 p.m. departure time. It was anticipated that teachers or students would use this time for varying purposes. The extent of this usage exceeded all expectations.

Students waited in long lines after school for the opportunity to use the facilities on the computer bus. In the beginning many students wanted to try the computer games that they had been unable to play during the day. However, most students soon tired of the simpler games and began to take advantage of the varied instructional activities provided by the bus. Students began to come to the bus in small groups to teach and learn from each other about the computers and their uses. The Media Center assistant faced an endless array of questions as the students became better informed.

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An anecdote will help the reader to understand how much students wanted to use the computer bus after school. On the second visit to the schools some students remembered that the bus was available for after school usage. When these students approached the Media Center Assistant and asked her about the availability of the bus, she responded affirmitively. Upon learning that the computer bus was ready to use after school, these students kept "the secret" to themselves and their friends with the hope of sharing with fewer other students. While not a tribute to character education this story does give some insight into the meaning of the computer bus to students.

There were several unannounced visitations by parents and a school board member to the computer bus during the after school hours. In the case of approximately eight to ten parents their spontaneous visits were prompted by their son's or daughter's excitement over the computer bus.

Some enterprising teachers made prior arrangements with the Media Center Assistant and their students were assigned homework that was done on the computer bus.

In all of the classes that used the computer bus the students were assigned to write a short story. The students wrote and edited their short stories on the computer terminals. They received output in the form of printout after they had finished this task. Students felt a sense of accomplishment and excitement in knowing that they got the computer to work for them.

At some schools where other computers are available in media centers the computer bus freed the school facilities for the primary grades. Many primary teachers took advantage of this situation and rushed their students to the media centers for some initial or additional computer instruction.

In general, teachers at all school sites reported improved behavior and attendance in their classes when the computer bus was at their school sites. The Media Center Assistant offered additional evidence supporting the claims of teachers in regard to student behavior. During the course of the Compubus Program involving over sixteen hundred students at eight school sites, she states that approximately ten students were removed from the computer bus for behavioral difficulties. This is a remarkably low number of students to be removed from an instructional program.

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DISCUSSION

This evaluation assessed the effectiveness of the Compubus Program against its program objectives. The study provided the Modesto City Schools District with initial information in relation to how well the target students achieved in beginning computer literacy skills with additional time and experiences. The major result of this evaluation showed that seventy percent of the sample of target students passed the computer literacy test.

The Compubus Evaluation also collected detailed factual information describing the operation of the program for the designated population which hinted at the relationships among variables. This descriptive/correlational research was aimed at discovering the interrelationships among the variables and describing them. Such exploratory data will be used in subsequent evaluations based on true or quasi-experiments to examine for instructional effects.

Eleven variables were correlated with each other and the criterion. An effort was made to isolate a set of predictor variables (or covariates) that could be used with the criterion in subsequent evaluations. This set of predictor variables would add experimental control to a treatment variable and sharpen the sensitivity of statistical analysis. On the basis of their high simple correlations and the amount of variation that they explained in the criterion five variables were identified: minimum competency reading test score, minimum competency math test score, primary language, arcade game usage, and grade.

Let's speculate for a moment about why these variables may be good predictors. The verbal content of the computer literacy test and the computer curriculum require proficiency in reading and language i.e., a fair degree of grade level proficiency in reading and enough language proficiency to learn "computerese", the technical language and vocabulary of the computer curriculum. These factors help us to understand the relationships between minimum competency reading test score, primary language, and grade with the criterion. The logical and sequential reasoning requirements of the computer curriculum help us to understand the relationship between minimum competency mathematics test score and the criterion. Lastly, what is not so obvious might be the relationship between weekly arcade game usage and the criterion. Very few students in the evaluation owned home computers. Additionally, students were limited by available resources in their school computer use. The relationship between weekly arcade game usage and the criterion was a proxy, albeit somewhat weak, for determining the interaction between students and computers.

Evaluations based on true or quasi-experiments should be conducted to examine for instructional effects of the Compubus Program or similar programs. Let us now examine some potential research questions in regard to instructional effects.

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What is the relationship between scheduling and student achievement performance? More specifically, what variations of computer bus assigned time on school sites, such as one continuous stay versus two shorter stays, maximize student achievement performance? Most importantly, does exposure to the computer bus curriculum improve student achievement at the junior high school level?

There is no compelling evidence, pro or con, to suggest that exposure to the elementary computer bus program will directly improve the performance of compensatory education students in competition with other students at the junior high school level. What about indirect instructional effects? For example, does the Compubus Program, by increasing students' motivation or by reducing students' anxieties, indirectly improve student achievement at the junior high school level for compensatory education students?

We have the anecdotal statements of teachers at the compensatory education schools which suggest that attendance and behavior improve during the assigned computer bus time at school sites. Furthermore, we have informal data, including pictures, which show students lining up after school to use the computer bus. This suggests some interesting questions in regard to the Compubus Program and its contributions to the total school program. Suppose there are substantial differences in attendance and behavior based upon whether the bus is or is not at a school site. Why? From a motivational standpoint, how many academic programs influence students enough to garner their after school participation? What are the implications of the Compubus Program for instruction and the total school program?

Modesto City Schools District's Compubus Program is a unique and promising approach to instruction under conditions of finite resources. The Compubus Program needs to be further evaluated to determine its instructional effects, both direct and indirect, on disadvantaged students.

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APPENDIX A:
Computer Literacy Test

Directions: Please read the following definitions carefully and find the computer terms they define. Type in the correct answer by choosing either A, B, C, or D. If you cannot read some of the words ask a teacher to help you. DO THE BEST THAT YOU CAN!

1. The set of keys that allows a person to put (input) information into the computer is called the . It looks like a typewriter.

   A. keyboard
   B. disk drive
   C. printer
   D. chip

2. The computer, monitor, printer, and disk drive are parts of the computer system. Together they are called

   A. memory.
   B. programs.
   C. hardware.
   D. software.

3. A tiny electrical part used to build today's computers is

   A. a chip.
   B. input.
   C. a printer.
   D. storage.

4. A disk that looks like a 45 record on which programs can be stored is

   A. a computer.
   B. a floppy disk.
   C. output.
   D. a disk drive.

5. A machine that allows you to make a paper copy (hard copy) of what information the computer has stored is

   A. a computer.
   B. storage.
   C. a disk drive.
   D. a printer.

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6. A place in the computer where instructions are stored to be used again is the

   A. keyboard.
   B. monitor.
   C. output.
   D. memory.

7. Any set of instructions, called a program, that tells the computer what to do is

   A. a chip.
   B. software.
   C. output.
   D. a disk drive.

8. A part of the computer that turns the floppy disk is the

   A. software.
   B. memory.
   C. input.
   D. disk drive.

9. The computer gives after it processes the information (input).

   A. programs
   B. floppy disks
   C. output
   D. storage

10. A machine that duplicates a mechanical process and has a memory is

    A. a computer.
    B. a printer.
    C. a keyboard .
    D. hardware.

11. The set of instructions to a computer written in a specific order that tells the computer what to do is the

    A. program.
    B. memory.
    C. input.
    D. monitor.

12. A part of the computer that looks like a T.V. screen is the . It shows us what the computer has done (output).

    A. floppy disk
    B. monitor
    C. program
    D. printer

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13. The information that people put into the computer is called

A. a chip.
B. memory.
C. input.
D. storage.

14. A place in the computer where information is kept is the

A. monitor.
B. output.
C. storage.
D. printer.

15. Which of these people writes instructions for a computer?

A. keypunch operator
B. computer programmer
C. computer operator
D. systems analyst

16. The police use computers to

A. decide whether a person is guilty or not guilty.
B. know what a criminal is doing at all times.
C. drive police cars.
D. quickly check who owns a car they have stopped.

17. Computers are NOT good for jobs that need

A. speed.
B. accuracy.
C. feelings.
D. all of the above.

18. Which people use computers to store large amounts of information?

A. government workers
B. police officers
C. librarians
D. all of the above

19. Which job uses the computer the most?

A. banking
B. teaching
C. transportation
D. medicine

20. Which statement about computers is TRUE?

A. Computers are tools which can be used for good or bad purposes.
B. Computers only help people to do things faster and better.
C. Computers cause people to lose jobs.
D. Computers control people.

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21. Suppose you want to practice multiplication problems on the computer. Which of these programs would you choose?

A. "Multiply and Divide"
B. "Typing Tutor"
C. "Add Man"
D. "Subtraction Racing"

22. Computers are good for

A. eating.
B. feeling.
C. processing data.
D. all of the above.

23. Computers are NOT good for

A. putting names in ABC order.
B. adding and substracting.
C. playing video games.
D. kicking a ball.

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COMPUTER BUS:

TEACHER CHECKLIST

GRADE	OBSERVATION BEHAVIOR	EQUIPMENT
4th	1. Type preselected sentence	Computer
	2. Type SHIFT/N	Computer
	3. Write "CATALOG"	Computer
	4. Type "RUN GAME" (name)	Computer
	5. Respond to 1st rompt	Computer
5th	1. Type preselected sentence	Computer
	2. Type SHIFT/N	Computer
	3. Press "ESC"	Computer
	4. Move Cursor (I,J,K,M)	Computer
	5. Press "ESC"	Computer
	6. Type "Modification" (word(s) or punctuation)	Computer
	7. Turn On	Softswap
	8. Load Disk	Softswap
	9. Type "CATALOG"	Softswap
	10. Type "RUN"	Softswap
	11. Respond to 1st Prompt	Softswap
6th	1. Type 3 preselected sentences	Computer
	2. Type SHIFT/N	Computer
	3. Press "ESC"	Computer
	4. Move Cursor (I,J,K,M)	Computer
	5. Press "ESC"	Computer
	6. Type "Modifications" (word(s) or punctuation)	Computer
	7. Turn On	"Lemonade" or Porter "PSST"
	8. Load Disk	"Lemonade" or Porter "PSST"
	9. Type "CATALOG"	"Lemonade" or Porter "PSST"
	10. Type "RUN"	"Lemonade" or Porter "PSST"
	11. Respond to 1st Prompt	"Lemonade" or Porter "PSST"

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APPENDIX B:
COMPUBUS QUESTIONNAIRE

NAME: _____

GRADE: _____

SCHOOL: _____

TEACHER: _____

AGE: _____

SEX: BOY GIRL (Circle One)

1. Do you have a computer in your home?

Yes No (Circle One)

2. If you have a computer in your home, how many hours a week do you use it?

0 1 2 3 4 5 6 7 8 9 10(or more)
(Circle One Number)

3. Do you have a computer in your school?

Yes No (Circle One)

4. If you have a computer in your school, how many hours a week do you use it?

0 1 2 3 4 5 6 7 8 9 10(or more)

5. How many hours a week do you play video games at home?

0 1 2 3 4 5 6 7 8 9 10(or more)
(Circle One Number)

6. How many hours a week do you play arcade games?

0 1 2 3 4 5 6 7 8 9 10(or more)
(Circle One Number)

7. What language do you speak most of the time at home?

_____
(Please Fill In)

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DIRECTIONS TO TEACHERS:

COMPUBUS QUESTIONNAIRE

This brief questionnaire is intended to elicit information regarding the background characteristics of students. These background characteristics of students can be powerful predictors of student achievement. Therefore, this questionnaire is an important part of the Compubus evaluation. Please do not omit any information.

The directions are merely meant to help you in obtaining the information from students. If you are in doubt about the directions, please use your judgment. We have faith in the judgment of teachers.

Please have the ten students from the enclosed list complete the questionnaire. Feel free to work with the students in a group to obtain this information. You may work with students collectively or individually using any methods or techniques that you feel will provide the most accurate information.

Let me clarify the seven questionnaire items.

Item one is aimed at determining the prior experience of students on a home computer. A home computer may be thought of as a computer console (oftentimes attached to the keyboard), a keyboard, a monitor (may be a television set), a disk drive/s and/or a cassette tape. Other peripherals such as a printer can be included but are not necessary.

Item two means time estimated to the nearest hour of home computer use. Zero is only used to indicate a complete absence of home computer use. Please provide examples and assistance to students who have trouble estimating time.

For item three see item one for clarification.

For item four see item two for clarification.

Item five is aimed at determining the prior experience of students on home video games. Home video games are played using a device (with preprogrammed capacity) and joysticks designed exclusively for game cartridges. A home computer can be considered to be a home video device when it is used with a software package (on tapes or disks) that contains games.

We understand that items two and five may be confusing. It is difficult to separate computer usage from game usage on a single device. Additionally, some games have instructional value. In distinguishing these items it may help you to think of computer usage in terms of instructional value. If the games' instructional value exceeds their amusement value, please classify them in the home computer category. When you are in doubt about any games classify them as video games.

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For item six see item two for clarification on estimating time.

Item seven can be broken down into two categories, English and non-English. For English simply have students write in the word "English". For non-English have students write in the name of their primary language.

If you have any problems with these directions, please contact the district Educational Analyst at 573-4125.

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